

REMARKS

By the present amendment, the specification has been amended to improve its presentation by, among other things, amending the Brief Description of the Drawings. The abstract has been amended to reduce its length and to be of one paragraph. Claims 15-21 have been amended to obviate the examiner's objections thereto and/or to further clarify the concepts of the present invention.

In addition, non-elected claims 1-14 as well as claims 27 and 28 have been canceled. Applicants reserve the right to file one or more divisional applications directed to the subject matter of the canceled claims. Furthermore, dependent claims 29 through 44 have been added. These new claims recite the subject matter deleted from independent claims 15 or 19. Entry of these amendments is respectfully requested.

In the Office Action, it was requested that Figures 6-11 of the drawings be amended to include the legend "Prior Art" because it was alleged that which is old is illustrated. As mentioned above, new drawing sheets for these Figures are submitted herein with the requested legend thereon.

In addition, the Abstract was objected to for being too long, apparently in contravention of the requirement that the Abstract be limited to 150 words. As mentioned

above, the Abstract has been revised herein to reduce its length and also to be of one paragraph.

The disclosure was objected to since the drawings show Figures 6A, 6B, 7A, etc., whereas the specification in the Brief Description of the Drawings only refers to these Figures as 6, 7, etc. The specification has been amended herein, as mentioned above, to utilize appropriate terminology in describing Figures 6-11 and 16.

Claims 15-21 and 27-28 were rejected under 35 USC § 112 as being indefinite. More particularly, a number of terms and/or phrases were alleged to be indefinite and the presentation of certain claims was questioned. Reconsideration of this rejection in view of the above claim amendments and the following comments is respectfully requested.

In response to this rejection, claims 15-21 and 27-28 have been extensively amended as was discussed above. It is submitted that the claims now are in full conformance with the provisions of the cited statute. Accordingly, withdrawal of the rejection under the second paragraph of 35 U.S.C. § 112 is respectfully requested.

Claims 15 and 19 were rejected under 35 USC § 102(b) as being anticipated by the patent to Pethig et al. In making this rejection of independent claim 15, it was asserted that the Pethig et al patent teaches a method for separating substances contained in a liquid

using a dielectrophoretic force. With respect to the claimed vacant space, it was asserted that any number of spaces between the electrodes as disclosed in the patent read on the vacant space. As to independent claim 19, it was asserted that the Pethig et al patent teaches optically detecting particles. Reconsideration of this rejection in view of the above claim amendments and the following comments is respectfully requested.

Before discussing the rejection in detail, a brief review of the presently claimed invention may be quite instructive. As defined by independent claim 15, the subject invention relates to a method of collecting substances comprising positioning liquid containing substances in the vicinity of an electrode having a vacant space therein, subjecting the liquid containing substances to influence by a negative dielectrophoretic force generated by application of voltage to the electrode, and collecting the substances subjected to influence by a negative dielectrophoretic force in the vicinity of the vacant space. Independent claim 19 recites a method similar to that defined by claim 15, but further includes the step of optically detecting the substance.

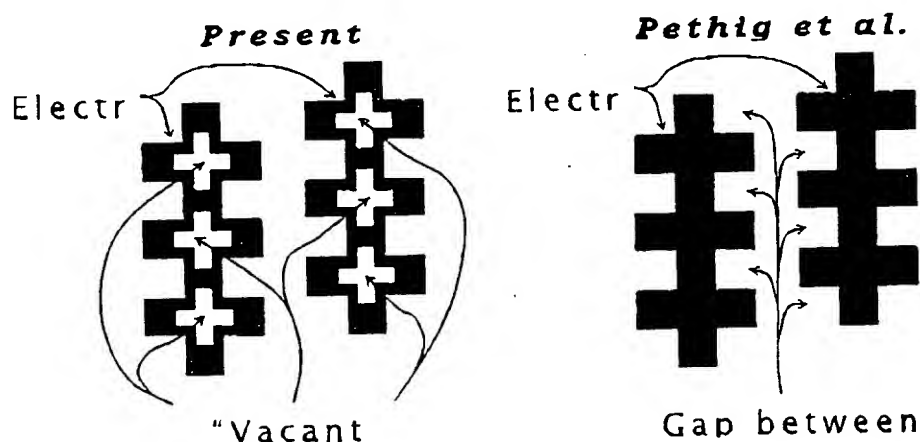
An important feature of the methods defined by independent claims 15 and 19 and the claims dependent thereon is that the electrode utilized in the method has a vacant space. As is set forth on page 19 of the subject specification, Figure 3 shows an example in which a hollow space (a vacant space) 12 is formed in a part 13 on which are concentrates substances (substances to be measured) subjected to influence by the

negative dielectrophoretic force generated by an electrode 11. It is submitted that the cited patent to Pethig et al does not teach or suggest the claimed methods including such an electrode having a vacant space.

In formulating the subject rejection as set forth in the Action, it appears that the "vacant space" feature of electrode used in the method of the present invention as described above has not been appreciated. The "vacant space," (that is, a hollow space or "window") provided in the electrode is readily evident from a consideration of Figs. 3–5, 13 and etc., where each electrode itself has a "vacant space."

In distinct contrast, the Pethig et al patent only discloses an how plural electrodes (more than two) are arranged relative to each other as exemplified by Fig. 6 and the like. It would appear from the statement of the rejection that it was mistakenly assumed that the gap between electrodes, which will be formed in the case where plural electrodes are formed, as shown in the Pethig et al patent is the equivalent to the "vacant space" in the electrode according to the presently claimed invention. However, as explained above, an electrode having a vacant space as shown and described in the subject application is not disclosed in the Pethig et al patent.

The differences between one embodiment of an electrode in accordance with the present invention and the electrodes disclosed by the Pethig et al patent are illustrated in the following:



The vacant space in the electrodes utilized in the presently claimed invention are simply not contained in the electrodes disclosed by the Pethig et al patent.

The above noted differences between the electrodes utilized in the present invention and the electrodes disclosed in the Pethig et al patent are quite important. Since the subject electrode has a vacant space, there is no electrode material under the substances to be measured, a fluorescent detector can be provided on the opposite side (a lower surface) of the electrode. As a consequence, electrode portions other than in the region where the substances to be measured are concentrated are covered with the electrode,

whereby the excitation light irradiated from the upper surface does not reach the lower surface. Therefore, the background can be reduced, and the S/N ratio is enhanced (slit effect). Since the measurement can be done from the lower surface such that the absorbance of the substances to be measured is measured, a qualitative detection and quantitative measurement of the substances to be measured can be conducted.

In summary, the Pethig et al patent does not teach or suggest, among other things, the specific electrode construction as utilized in the subject methods. As such, the electrodes disclosed in that patent cannot have produce the effects as outlined above when electrodes containing a "vacant space" (hollow space) are used.

For the reasons stated above, withdrawal of the rejection under 35 U.S.C. § 102(b) and allowance of claim 15 and 19 over the cited Pethig et al patent are respectfully requested.

Independent claims 27 and 28 were rejected under 35 USC § 102(b) as being anticipated the patent to Fiedler et al. In making this rejection, it was asserted that the cited patent disclosed a method of separating particles where a channel resides near a series of electrodes and that this channel defines a place that is at a lower level than that of the electrode level. Reconsideration of this rejection in view of the above claim amendments and the following comments is respectfully requested.

As was noted above, claims 27 and 28 have been canceled herein. Therefore, the subject rejection is now moot and, accordingly, withdrawal of the rejection under 35 U.S.C. § 102(b) over cited Fiedler et al patent is respectfully requested.

Dependent claim 16 was rejected under 35 USC § 103(a) as being unpatentable over the patent to Pethig et al in view of the patent to Benecke. In making this rejection, it was acknowledged that the Pethig et al patent did not disclose the use of a lid to define a gap between the electrodes, but it was asserted that the Benecke patent teaches an alternative dielectrophoresis device using a cover or lid over the electrode assembly. In addition, dependent claims 17 and 18 were rejected under 35 USC § 103(a) as being unpatentable over the patent to Pethig et al in view of the patent to Benecke further in view of the patent to Parton. Further, dependent claims 20 and 21 were rejected under 35 USC § 103(a) as being unpatentable over the patent to Pethig et al in view of the patent to Parton. In making this rejection of claim 15, it was acknowledged that the Pethig et al patent does not teach the complex recited and it was asserted that the Parton et al patent

teaches a dielectrophoretic device where the substance being analyzed can be either cells or complexes of particles. Reconsideration of each of these rejections in view of the above claim amendments and the following comments is respectfully requested.

The above remarks relative to the teaching deficiencies of the Pethig et al patent are reiterated with regard to these rejections. It is submitted that neither of the cited patents to Benecke or Parton et al supply these deficiencies in that none teach or suggest the use of an electrode having a vacant space, that is, a space in the electrode is formed in a part on which are concentrates substances (substances to be measured) subjected to influence by the negative dielectrophoretic force generated by an electrode.

For the reasons stated above, withdrawal of the rejections under 35 U.S.C. § 103(a) and allowance of claims 17-18 and 20-21 over the cited patents are respectfully requested.

In view of the foregoing, it is submitted that the subject application is now in condition for allowance and early notice to that effect is earnestly solicited.

Serial Number: 09/833,566
OA dated September 25, 2003
Amdt. dated February 25, 2004

In the event this paper is not timely filed, the undersigned hereby petitions for an appropriate extension of time. The fee for this extension may be charged to Deposit Account No. 01-2340, along with any other additional fees which may be required with respect to this paper.

Respectfully submitted,

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Enclosures: Redlined Drawings - Figs. 6-11; Substitute Drawings- Figs. 6-11